

What is claimed is:

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1. A method for tracking multiple objects in a video sequence comprising:  
selecting an initial configuration comprising a plurality of objects;  
predicting a current configuration; and  
computing a likelihood for the current configuration.
  2. The method of claim 1 wherein said predicting step comprises  
performing an object level prediction.
  3. The method of claim 1 wherein said predicting step comprises performing  
a configuration level prediction.
  4. The method of claim 3 wherein said configuration level prediction  
handles object addition and deletion from a current configuration.
  5. The method of claim 1 wherein the predicting step comprises:  
determining a percentage of the objects that are covered by the  
current configuration;  
determining a number of current configurations that correspond to  
the objects; and  
maximizing said percentage and minimizing said number to identify  
an optimal current configuration.
  6. The method of claim 5 wherein said percentage determining step  
comprises solving:

$$\gamma = \frac{|A \cap (\bigcup_{i=1}^m B_i) + b|}{|A| + b}$$

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7. The method of claim 5 wherein said percentage determining step  
comprises solving:

$\xi =$

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performing hierarchical sampling of at least one frame of video in said video sequence, wherein said sampling is performed in an object

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repeating said sampling for each frame of video in said video sequence to track objects within the video sequence.

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11. A computer readable medium containing a program that, when executed by a processor, causes an image processing system to perform a method comprising:

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13. The method of claim 11 wherein said predicting step comprises performing a configuration level prediction.

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maximizing said percentage and minimizing said number to identify an optimal current configuration.

16. The method of claim 11 wherein said percentage determining step  
10 comprises solving:

$$\gamma = \frac{|A \cap (\bigcup_{i=1}^m B_i) + b|}{|A| + b}$$

17. The method of claim 15 wherein said percentage determining step comprises solving:

$$\xi = \frac{|A \cap (\bigcup_{i=1}^m B_i) + c|}{|(\bigcup_{i=1}^m B_i) + a|}$$

18. The method of claim 11 wherein multiple objects in a video sequence are represented by said configuration comprising a plurality of modeled objects.

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